Remarks

The Official Office Action of May 3, 2006, and the references therein made of record have been carefully considered.

The claims currently in this application are more nearly like the claims submitted in the amendment of September 22, 2005, meaning that a rejection by the Examiner is more likely to be based on Hockstein '767 in view of Song. The Examiner's previous position was that it would be obvious to fill the voids 24 of Hockstein with the metallic paste 18 of Song. This combination of references is not sustainable against the claims currently in the application for a variety of reasons.

Hockstein '767 discloses an metal filled organic resin for the circuit traces 18. So far as is known by applicant, all metallic pastes have to be fired in order to bond to a substrate. So far as is known by applicant, the temperatures necessary to fire a metallic paste is much greater than the temperature that will destroy an organic resin. It will not suffice to say that it would be obvious to fire the metallic paste at a temperature that would not destroy the organic resin of the circuit traces because such low temperatures will not set or bond the metallic paste to its substrate. Thus, a combination of Hockstein '767 and Song proposes that which is not possible - a metallic paste that has to be fired on a substrate having an organic resin thereon.

Lest the Examiner take the word "fired" in the claims to be a process limitation, a person of ordinary skill in the art of making these substrates can visually or by simple means determine that a coating has been fired onto a substrate.

Attached is a test report entitled "Test Report - Anotherm™ vs IMS Substrate in Power LED Applications". This test report compares this invention, identified as ANOTHERM, with a device very similar to Hockstein '767. The IMS stands for "insulated metal substrate" and is an epoxy or circuit board material filled with an inorganic dielectric. There are at least two things from this report that are significant: (1) in the graphs at the end show that the thermal conductivity of the ANOTHERM device can hardly be improved upon and (2) in the paragraphs bridging pages 2 and 3, the junction temperature of a 1 watt ANOTHERM device is 12.5°C lower than the IMS device it is compared to and the junction temperature of a 3 watt ANOTHERM device is 34°C lower than the comparable IMS device. These temperatures are particularly significant because the overall problem with high power LED's is that they produce a good deal of heat and the rate of chemical reactions roughly doubles with every 10°C rise in temperature so the rate that LED's deteriorate doubles with every 10°C rise in temperature. In addition, the light output of LED's falls with rising temperature and, at a fairly modest temperature, LED's fail.

It is accordingly submitted that independent claims 1, 25 and 30 and their dependent claims are allowable over the art of record.

It is accordingly submitted that this application is in condition for allowance and early steps toward that end are earnestly solicited.

Respectfully submitted,

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